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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,884	03/08/2002	Jean-Sebastien Coron	032326-161	5848

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EXAMINER

HENNING, MATTHEW T

ART UNIT	PAPER NUMBER
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2131

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/913,884

Applicant(s)

CORON ET AL.

Examiner

Matthew T. Henning

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

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1 This action is in response to the communication filed on 11/15/2006.

2 **DETAILED ACTION**

3 ***Response to Arguments***

4 Applicant's arguments with respect to claims 24-37 have been considered but are moot in
5 view of the new ground(s) of rejection.

6 All rejections and objections not set forth below have been withdrawn.

7 Claims 1-23 have been cancelled and claims 24-37 have been examined.

8 ***Priority***

9 Applicant has relied upon the foreign priority papers to overcome the previous prior art
10 rejection by making of record a translation of said papers in accordance with 37 CFR 1.55. See
11 MPEP § 201.15. As such, the previous rejection in view of Ohki et al. has been withdrawn.

12
13 ***Claim Rejections - 35 USC § 103***

14 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
15 obviousness rejections set forth in this Office action:

16 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
17 section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
18 such that the subject matter as a whole would have been obvious at the time the invention was made to a person
19 having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the
20 manner in which the invention was made.

21
22 Claims 24-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et
23 al. (US Patent Number 6,278,783) hereinafter referred to as Kocher1, and further in view of
24 Kocher et al. (US Patent Number 6,327,661) hereinafter referred to as Kocher2.

25 Regarding claim 24, Kocher1 disclosed a countermeasure method in an electronic
26 component that implements the DES cryptographic algorithm in which multiple rounds of

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1 calculation are performed on input data (See Kocher1 Abstract), wherein each round of
2 calculation includes at least the following operations: a first permutation of data (See Kocher1
3 Col. 10 Lines 55-60); manipulation of the permuted data by a secret key (See Kocher1 Col. 10
4 Line 61 – Col. 11 Line 5); a table look-up operation based on the manipulated data (See Kocher1
5 Col. 11 Lines 6-7); and a second permutation of data (See Kocher1 Col. 11 Lines 7-11), but
6 Kocher1 failed to disclose wherein, for a plurality of successive rounds of said algorithm, at least
7 one of said first and second permutations of data comprises the following steps: selecting a first
8 random value having the same size as the data being permuted, performing an exclusive-or
9 operation between the data being permuted and the first random value to generate a second
10 random value, executing said permutation operation on each of the first and second random
11 values, to generate respective first and second random results, and performing an exclusive-or
12 operation between said first and second random results to produce a final permuted result.

13 Kocher2 teaches that in order to protect against external monitoring attacks, processes,
14 including DES permutations, should be performed using a leak-minimized permutation operation
15 (See Kocher2 Col. 10 Line 50 – Col. 13 Line 19). Kocher further describes that the permutation
16 operations should be altered by selecting a first random value having the same size as the data
17 being permuted, performing an exclusive-or operation between the data being permuted and the
18 first random value to generate a second random value, executing said permutation operation on
19 each of the first and second random values, to generate respective first and second random
20 results, and performing an exclusive-or operation between said first and second random results to
21 produce a final permuted result (See Kocher Col. 12 Lines 20-60).

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1 It would have been obvious to the ordinary person skilled in the art at the time of
2 invention to employ the teachings of Kocher2 in the DES system of Kocher1 by performing the
3 permutation processing according to the leak-minimized permutation operation. This would
4 have been obvious because the ordinary person skilled in the art would have been motivated to
5 protect the permutation processing from external monitoring attacks.

6 Regarding claim 31, Kocher1 disclosed an electronic component that implements the
7 DES cryptographic algorithm in which multiple rounds of calculation are performed on input
8 data, said electronic component including a microprocessor that executes the following
9 operations during each round of calculation (See Kocher1 Abstract): a first permutation of data
10 (See Kocher1 Col. 10 Lines 55-60); manipulation of the permuted data by a secret key (See
11 Kocher1 Col. 10 Line 61 – Col. 11 Line 5); a table look-up operation based on the manipulated
12 data (See Kocher1 Col. 11 Lines 6-7); and a second permutation of data (See Kocher1 Col. 11
13 Lines 7-11), but Kocher1 failed to disclose wherein, for a plurality of successive rounds of said
14 algorithm, at least one of said first and second permutations of data comprises the following
15 steps: selecting a first random value having the same size as the data being permuted, performing
16 an exclusive-or operation between the data being permuted and the first random value to
17 generate a second random value, executing said permutation operation on each of the first and
18 second random values, to generate respective first and second random results, and performing an
19 exclusive-or operation between said first and second random results to produce a final permuted
20 result.

21 Kocher2 teaches that in order to protect against external monitoring attacks, processes,
22 including DES permutations, should be performed using a leak-minimized permutation operation

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1 (See Kocher2 Col. 10 Line 50 – Col. 13 Line 19). Kocher further describes that the permutation
2 operations should be altered by selecting a first random value having the same size as the data
3 being permuted, performing an exclusive-or operation between the data being permuted and the
4 first random value to generate a second random value, executing said permutation operation on
5 each of the first and second random values, to generate respective first and second random
6 results, and performing an exclusive-or operation between said first and second random results to
7 produce a final permuted result (See Kocher Col. 12 Lines 20-60).

8 It would have been obvious to the ordinary person skilled in the art at the time of
9 invention to employ the teachings of Kocher2 in the DES system of Kocher1 by performing the
10 permutation processing according to the leak-minimized permutation operation. This would
11 have been obvious because the ordinary person skilled in the art would have been motivated to
12 protect the permutation processing from external monitoring attacks.

13 Regarding claims 25 and 32, Kocher1 and Kocher2 disclosed performing both of said
14 first and second permutation operations in each of said plurality of successive rounds (See the
15 rejection of claims 24 and 31 above).

16 Regarding claims 26 and 33, Kocher1 and Kocher2 disclosed that the first and second
17 permutation operations utilize different respective first random values (See Kocher2 Col. 12
18 Lines 45-47).

19 Regarding claims 27 and 34, Kocher1 and Kocher2 disclosed that said plurality of
20 successive rounds comprise a first set of successive rounds consisting of the first three rounds of
21 said algorithm, and a second set of successive rounds consisting of the last three rounds of said
22 algorithm (See the rejection of claims 24 and 31 above as well as Kocher1 Fig. 1).

Regarding claims 29 and 36, Kocher1 and Kocher2 disclosed that said manipulating steps comprise exclusive-or operations (See Kocher2 Col. 12 Lines 45-50).

Regarding claims 30 and 37, Kocher1 and Kocher2 disclosed that said bit-by-bit operations comprise a key permutation operation, a shift operation and a compression permutation operation (See Kocher1 Col. 10 Lines 16-24).

Conclusion

Claims 1-23 have been cancelled and claims 24-37 have been rejected.

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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1 however, will the statutory period for reply expire later than SIX MONTHS from the date of this
2 final action.

3 Any inquiry concerning this communication or earlier communications from the
4 examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790.

5 The examiner can normally be reached on M-F 8-4.

6 If attempts to reach the examiner by telephone are unsuccessful, the examiner's
7 supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the
8 organization where this application or proceeding is assigned is 571-273-8300.

9 Information regarding the status of an application may be obtained from the Patent
10 Application Information Retrieval (PAIR) system. Status information for published applications
11 may be obtained from either Private PAIR or Public PAIR. Status information for unpublished
12 applications is available through Private PAIR only. For more information about the PAIR
13 system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR
14 system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would
15 like assistance from a USPTO Customer Service Representative or access to the automated
16 information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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23 Matthew Henning
24 Assistant Examiner
25 Art Unit 2131
26 2/2/2007


AYAZ SHEIKH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100